

# Prevention: Current Status in Undergraduate Medical Education

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THE TEACHING OF PREVENTIVE MEDICINE has been changing rapidly in the past 10 years. Four aspects of this change are worthy of special consideration:

- It is more clinically oriented, moving away from public health.
- It is increasingly aimed at behavioral modification and patient involvement in the plan of treatment.
- Teaching methods have become more creative and sophisticated, at times involving conjoint teaching with other clinical disciplines.
- Involvement of students in the plan of education has lagged.

## Clinical Orientation

Instruction in preventive medicine has evolved through several stages: (a) the review of bacteriological and

sanitary advances in the early 1900s, (b) instruction in public health, often by local health officers, in the 1920s and 1930s, (c) the comprehensive care of patients with attention to social problems and community resources in the 1940s and 1950s, (d) the advent of community medicine in the 1960s, emphasizing the community as the patient, which was accompanied by more teaching of epidemiology, and (e) the interface of community medicine with direct patient care in the 1970s and into the 1980s. This evolution has been extremely varied; for example, even now some departments are predominantly concerned with the control of infectious disease (1).

This variation is revealed dramatically by the names of departments that may be considered "in the fold." In a recent survey, conducted by Dr. F. Marian Bishop for the Association of Teachers of Preventive Medicine, some 49 names were reported for the 81 medical schools with an identifiable entity. The terms used in the departmental titles with "health" or "medicine" included the following:

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<i>Term</i>	<i>Number of times used</i>
Community	70
Preventive	36
Family	28
Public health	11
Epidemiology	7
Environmental	6
Social	5
Health care	3
Occupational	2
Biometrics	2
International	2
Administration	2
Emergency	1
Health policy	1
Microbiology	1
Rehabilitation	1

In contrast, in a similar number of departments in 1964 "preventive" occurred 65 times, "community" only 11 times, and "public health" 31 times. Family medicine was not represented.

The number of medical schools with departments of preventive medicine increased from 1964 through 1980 and, if medical schools that depend on instruction from the faculty of an affiliated school of public health are included, the numbers are as follows:

<i>Years</i>	<i>Schools with department<sup>1</sup></i>	<i>Schools without department</i>
1964	79	13
1972-73	91	22
1978-80	97	28

<sup>1</sup> Some schools had more than 1 department of preventive medicine.

Although the number of departments of preventive medicine has increased, the proportion of schools having such departments has decreased. An apparent increase in the number of new schools without departments is partly due to the early stage of development of some schools, but in other instances it is the result of the consolidation of preventive and community medicine departments with other entities. For example, some departments of family medicine have taken on responsibilities for community health without including the term community in their titles.

Specifically, there are presently 28 departments that combine, officially and by name, preventive medicine or a related term and family medicine. The elimination of departments of preventive medicine in several schools in the past few years is, however, of particular concern, especially at a time when public policy initiatives are increasingly focused on prevention.

As shown in table 1, the disciplines represented by preventive medicine faculties are also varied (2). Faculty consisted of a majority of physicians in combination with a large number of biostatisticians and

behavioral scientists. However, these data are about 8 years old, and a similar survey today undoubtedly would show a substantial increase in the number of physicians because of the 28 departments that include family medicine.

Information was requested in the 1981 survey on specific clinical subjects (table 2). However, the course offerings required in 1974 are more representative of overall curriculums (table 3).

Although 1981 courses in many schools retained their original names, the content clearly has shifted toward a clinical focus. Compared with 10 or 15 years ago, the amount of teaching of occupational medicine, nutrition, and maternal and child health has increased substantially. A grounding in biostatistics and epidemiology still remains crucial to the preventive focus.

**Table 1. Disciplines represented by preventive medicine faculties in 78 schools of medicine, 1974**

<i>Faculty</i>	<i>Number of schools</i>	<i>Total</i>	<i>Range</i>
Physicians	78	665	1-31
Biostatisticians	58	139	1-9
Behavioral scientists	53	147	1-10
Nurses	41	110	1-21
Social workers	38	76	1-18
Administrators	38	108	1-16
Health planners	28	51	1-6
Nutritionists	19	49	1-5
Health educators	15	35	1-5

SOURCE: reference 2.

**Table 2. Clinical subject matter presented by 55 departments of preventive medicine, 1981**

<i>Subject</i>	<i>Year of Instruction</i>				<i>Total</i>
	<i>1st</i>	<i>2d</i>	<i>3d</i>	<i>4th</i>	
Occupational medicine	15	21	10	6	52
Nutrition	10	9	3	3	25
Maternal and child health	7	9	5	2	23
International health	6	7	1	2	16
Mental health	6	8	3	1	18
Gerontology	12	13	8	4	37

**Table 3. Courses required in 78 schools of medicine, 1974, in percentages**

<i>Course</i>	<i>Year of Instruction</i>			
	<i>1st</i>	<i>2d</i>	<i>3d</i>	<i>4th</i>
Epidemiology	26	52	2	2
Biostatistics	35	28	3	0
Medical care	34	39	6	6
Clerkships	8	2	16	12
Other	25	20	8	1

Epidemiology is not only essential to the understanding of disease control in populations, but it is also essential in preparing medical students to deal with issues of relative risk in laying out an individual health maintenance program or in considering the overall emphasis and use of resources in a large prepaid group practice. Although there is some risk of neglecting disease control in populations, the requirement for sound epidemiologic practice in planning preventive services for health insurance enrollees will be more relevant to most practitioners than disease control as a part of public health practice. Our graduates will likely be responsible not only for the patients who come to the office voluntarily, but also for those enrolled members of the practice who may need to be sought out for curative and preventive services.

In the 1981 survey 42, or 76 percent, of the 55 reporting departments of preventive medicine included "straight" prevention in their curriculums. As used in this paper, straight prevention means that deliberate attention is given to the subject of prevention in clinical practice, whether it is taught in the preclinical or the clinical years. These course offerings present considerable material on behavioral modification with the growing use of health hazard appraisal as a means of introducing patients to a direct personal involvement in decisions as to lifestyle. This involvement often includes the preparation of an agreement or contract between patient and physician as to what each will do to improve the patient's health status. Further, a number of departments have initiated health promotion activities for the faculty so that students may be encouraged to "do as they do," not just as they say. Of the 55 departments 17, or 31 percent, offer health promotion for faculty.

### Teaching Methods

The increasing emphasis on a clinical context in the teaching of preventive medicine has produced imaginative course work that extends from new emphases at the bedside or in the clinic to community projects with varying degrees of clinical linkage. The following are four basic settings and methods that have been tried within those settings.

**The case study approach.** McMaster University has pioneered the use of case studies in the first year of medical school so that clinical skills can be developed concurrently with the accumulation of preclinical or basic science knowledge and skills. In this setting, epidemiology and its application develop together, along with other knowledge from both preclinical and clinical disciplines (3).

**The primary care clerkship.** While this term sounds like the product of the primary care movement beginning in the late 1960s with the development of family practice programs, there were important antecedents in the previous decade or even earlier. Many States had undertaken rural clerkships in an effort to woo students into rural practice. In the 1950s, George Reader at Cornell Medical School introduced a block ambulatory clerkship; in the late 1950s, Leonard Fenninger and Isidore Levine led an ambulatory experience extending throughout the fourth year at the University of Rochester (4). These early experiments were attended by serious problems in getting faculty who enjoyed teaching into the ambulatory area. The faculty tended to exhibit a cycle in which there was great enthusiasm at first, then a wearing down of interest, and, ultimately, a serious lack of concern and attention.

Most of the clinical years' course work described in the recent ATPM report (2) consists of primary care clerkships. The amount of prevention emphasized in these clerkships varies; however, pediatric immunizations and well-baby care are common features, and adult care is being focused increasingly on healthy living habits and effective control of chronic disorders such as hypertension. Almost all of these clerkships stress appropriate screening procedures and health education. These ambulatory clerkships based in university hospitals have had substantial difficulties in winning the support and involvement of clinical faculty. The growth of family medicine and other primary care disciplines has been closely associated with faculty, especially full-time faculty, who enjoy ambulatory-care teaching, but a major dilemma has emerged as to how the costs of such teaching can be met. Since the costs of inpatient clerkships have been "bootlegged" through the hospital bill, there has been less pressure from third parties for covering those hidden costs. However, the expense of hospital operation of ambulatory areas is palpable, and it is difficult to finance this type of clinical education. Of note, much of the conjoint teaching takes place in these primary clerkship settings (table 4).

**Prevention for hospitalized patients.** Long-term health needs, including preventive services, are neglected in the care of hospitalized patients. This is not surprising, but an episode requiring hospital care may provide the only opportunity for some patients to have their general status assessed and plans made for their future health care. Richard Cabot's social service rounds at the Massachusetts General Hospital, initiated in 1905, constituted an effort in this direction, but they have not been adopted as widely as one might have hoped.

**Table 4. Conjoint teaching with departments of preventive medicine, 1981**

Discipline	Year of instruction				Total number departments
	1st	2d	3d	4th	
Internal medicine . . . .	3	4	6	5	18
Family medicine . . . . .	2	1	4	3	10
Pediatrics . . . . .	2	1	4	2	9
Other . . . . .	0	2	2	2	6

As a means of attending to a number of crucial medical, social, and ethical issues in hospital care, there is much to say for a shift in clinical teaching from the clinical pathological conference atmosphere, using case presentations made on the day after admission, to a principal clinical teaching exercise taking place on the day before discharge. The latter scenario would present an opportunity for an overview of the total care the patient had received. Questions might be raised not only as to whether hospital care had been optimal but also as to the long-term needs of the patient, including preventive measures or services, both biomedical and psychosocial. Students could consider whether the patients' rights had been observed properly and how overall hospital care could have been improved. Some such efforts are underway, and they provide particularly fruitful settings for conjoint teaching (5).

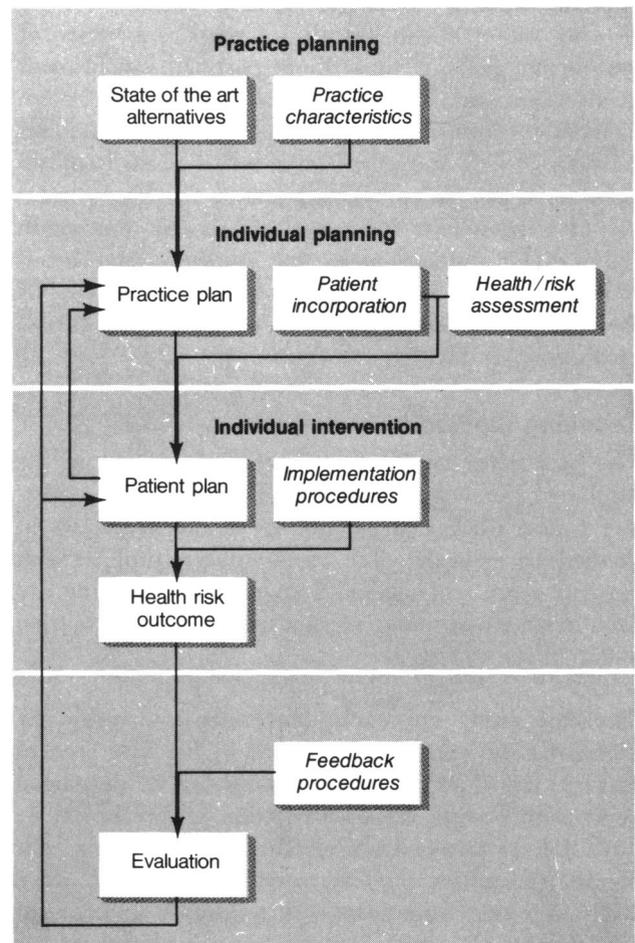
Also important in the hospital teaching setting is that resident staff must actively reinforce teaching in prevention before it is absorbed and practiced by students. Indeed, in my opinion, the most powerful negative factor in the teaching of prevention in the clinical years is the attitude of the resident on the floor, the students' most available role model, who says, "Now, let's cut out that preventive stuff and get on with what really matters." Somehow the student has to have that attitude countered by some kind of enthusiasm, and in all likelihood the place for it will be in the primary care clerkship.

**The community clerkship.** A number of departments provide extramural experience in the community. Sometimes this experience is in the preclinical years, as with the imaginative program in community organization pioneered by Prof. Max Pepper at St. Louis University. Others are given in the clinical years as a block experience of alternating with in-hospital clerkships. At Mt. Sinai, Kurt Deuschle has had such a clerkship for a number of years (6). Fourth-year students are assigned to a community agency where they are presented with a problem in a population group,

asked to find a solution, and then to prepare a final report. One such project might be, "Are HMOs really prevention oriented?" Other schools use small tutorial groups to discuss such topics as patient education and prevention in the management of one's practice. Dartmouth Medical School has such a course, as does the University of Maryland. At Meharry Medical College, students undertake projects in rural areas somewhat like the Mt. Sinai model, emphasizing the health status of the population and potential plans for improving health status with appropriate preventive measures, taking account of available facilities.

At Brown University, students in a combined program of clerkship and community activities spend about half of their time in the ambulatory care preceptorship and the other half in seminar discussions and presentations (including the use of actors in simulating patient interaction) to consider the issues faced in and around the ambulatory clinic. These arrangements allow for involvement at the time the patient

**A model for prevention in clinical practice**



care is being provided, which is important in focusing the student's attention on community issues. Students' previous background in epidemiology and biostatistics can be exploited in order to reach the conclusions needed.

In addition to the preceding four settings, a comprehensive approach to the methodology of teaching prevention has been sponsored for the past several years by the Association of Teachers of Preventive Medicine and funded by the Kellogg Foundation (7,8). By use of rigorous educational methodology, the tasks of prevention in clinical practice have been identified, and a proposed model exploits these findings to create a plan of practice (see chart). This model is based on the premise that effective prevention must be built on a foundation of a well-planned practice for broad patient needs, including the tailoring of the individual health plan to the individual patient's characteristics. Field testing of specific modules is presently underway in a number of departments of preventive medicine.

### Student Involvement

Many departments of preventive medicine plan course offerings with student input, but there remains widespread dissatisfaction among students and faculty with the way the teaching is done. Since one hears these comments not only in this country but in most others, they may represent an irreducible dissonance between behavioral and biomedical science. However, it is quite likely that our teaching would be received more enthusiastically if we were more adroit about the equivalent of the patient contact. Sustained effort is needed to uncover the most effective way to impress students with the importance of prevention in clinical practice and then to determine jointly the means by which they will acquire this knowledge and skill. At a minimum, students should engage in making recommendations and judgments as to how their learning could be enhanced.

One of the most difficult views to transmit to students, however, is that there is no fixed or established best way to achieve one's clinical goals; rather, it is a constantly changing game. Medical students need to acquire a way to keep abreast of new clinical knowledge. Also, they must learn methods for assessing how well they are doing.

Another issue related to student receptivity to preventive medicine teaching is that prevention does not provide the excitement or satisfaction experienced when the patient expresses gratitude to the physician. In response to this concern, more attention should probably be paid to the qualities of students at the

time of recruitment and admission to medical school. It may be that we are admitting students who primarily are seeking the respect, affection, and love that patients often give their physicians; if this is so, then curative rather than preventive medicine will attract them. However, students who are more concerned with broader humanistic issues and improving the welfare of society may have a greater potential for preventive medicine.

### Conclusion

The outlook for the future of the teaching of preventive medicine is optimistic and challenging. Concepts of prevention and new methods of interlacing prevention with clinical teaching are being tested, and political and social leaders increasingly are emphasizing the importance of preventive health care.

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